PUBLIC BROCHURE

BARRON CREEK IMPROVEMENT STUDY

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Forward

This second brochure on Barron Creek Improvement Study summarizes and presents, in brief, some of the possible alternative plans of providing flood protection to residents in the vicinity of Barron Creek between El Camino Real and Gunn High School. As compared to the first brochure, this brochure includes more definitive alternative plans and preliminary cost evaluations of these plans.

It is intended that the proposed improvement of Barron Creek be responsive to the desires of affected and interested parties.

BARRON CREEK IMPROVEMENT STUDY

1.0 Objective of the Study

The objective of the study is to consider various alternative plans to convey the one percent flood (a flood with an average recurrence period of 100 years) through the open reach of Barron Creek from Gunn High School to the street crossing of Los Robles and Laguna Avenue so as to prevent flooding developed and undeveloped areas along and downstream of the reach.

2.0 General Description of the Creek and its Watershed

Barron Creek, formerly known as Dry Creek, originates in the foothills near La Paloma Avenue in Los Altos Hills. The creek is an open channel up to the crossing of West Fremont and Arastradero Road, where it enters a 66-inch pipeline. This pipe discharges into a channel upstream of Foothill Expressway and the channel terminates in a retarding basin at Gunn High School. From here, the creek enters a 60-inch pipeline which discharges into an open channel. This channel parallels Los Robles Avenue up to Laguna Avenue where the creek enters a 60-inch pipeline. This pipeline discharges into a concrete lined channel at El Camino Real. The lined channel carries creek flow to the confluence with Adobe Creek near Bayshore Freeway and then into San Francisco Bay.

Development within the floodplain of the creek upstream of Gunn High School is not intense. However, areas downstream of Gunn High School are well urbanized and need protection against flooding. The concrete channel downstream of El Camino Real is capable of carrying the one percent flood, but the open reach of Barron Creek along Los Robles Avenue has inadequate head to drive the flow through the existing pipe between Laguna Avenue and El Camino Real. This pipe is capable of discharging about 210 cubic feet per second (cfs) of water as compared to expected 100-year peak flow of 310 cfs, assuming that the sedimentation basin could be empty when the 100-year flood would arrive. Under the same assumption the peak outflows from the basin corresponding to floods with expected reoccurrence interval of 50, 25 and 20 years, would be about 253, and ____ cfs respectively. Thus the existing system is capable of handling floods up to ____ year frequency.

3.0 Alternative Plans of Improvement

3.1 General

The flood protective measures can be classified into two broad groups: non-structural measures and structural measures. The non-structural measures consist of floodplain zoning concepts combined with flood insuring of the properties. The floodplain zoning concept is best utilized in a floodplain area presently undeveloped and would limit future development to purposes compatible with flooding. The flood insurance concept is applicable to the existing urban developments within the floodplain. However, there are certain conditions attached to such insurance.

Information as to eligibility, restrictions, premium, etc., for the flood insurance may be found in an Appendix to this Brochure.

Structural measures possible are construction of levees and floodwalls to protect properties against high waters, improvement of existing channels and structures so as to increase their discharge capacity and thus lower the high water levels or construction of flood detention basins in the upstream reaches so as to reduce the peak flow in the reach under consideration.

For this study, levee or floodwall construction is considered not feasible because of the excessively high (about 15 feet near Laguna Avenue) levees or walls. Further, while passing 100-year flood, velocities in the span reach will not be erosive, except at a few locations. Therefore, sack or stone riprapping or concreting of the channel is not considered.

The inlet structure at the sedimentation basin needs improvement - irrespective of the type of alternative selected. Therefore, in each of the following alternative plans the cost of such improvement is included.

3.2 Alternative Plan 1: Do Nothing

Under the existing conditions, about 195 properties are likely to be affected by the 100-year flood and would require protection in the form of federal flood insurance. The total market value of these properties, as obtained from 1973 Assessor's Books, is about 7,669,000 dollars. Assuming a 5 percent increase in property value during the year 1973-74, the 1974 assessed valuation was estimated to be 8,052,500 dollars.

As specified by the Federal Administration of Flood Insurance Program, the amount of insurance should be at least equal to the outstanding principal balance of the loan or the maximum limit of coverage made available with respect to the particular type of property under the Act, whichever is less. Assuming that about 80 percent of the property value as an outstanding debt, the amount of loan will be about $6,442,000. The annual flood insurance cost at 25 cents per 100 dollars of insurance, will then be equal to about 16,100 dollars. This amount is equivalent to a capital investment of 268,000 dollars at 6 percent interest rate. Adding 5,000 dollars for inlet improvement at the sedimentation basin, the total cost of this alternative is estimated to be 273,000 dollars.

3.3 Alternative Plan 2: Reduce the Pipe Size Under Spillway So As to Reduce Outflow through the Pipe to 210 cfs.

Since the outflow from the basin is reduced, larger storage will be necessary in sedimentation basin so as to prevent overflow from the basin. This, in turn, will require raising of the existing levees, raising of the spillway crest, raising of portions of the road near Veteran's Hospital and some additional low levees. A maximum of about 5 feet raising of levees and spillway crest would be necessary. The total cost for this alternative plan is estimated to be about 147,000 dollars including about 50,000 dollars for road reconstruction.

3.4 Alternative Plan 3: Continuous Pipeline from Sedimentation Basin at Gunn High School to El Camino Real.

This plan considers laying 60-inch pipe in the open reach of Barron Creek between Gunn High School and Laguna Avenue and in the open concrete channel at Gunn High School, thus providing a continuous pipe system up to El Camino Real. It would be necessary to raise the spillway crest by about 9 inches so as to prevent flow over the spillway. Currently all storm sewers between Laguna and El Camino Real are connected to the existing 60-inch - 66-inch pipe carrying Barron Creek waters. During winter storms some of these storm sewers (especially those at the intersection of Campara) sometimes backflow probably because piezometric water level in the pipe is higher than inlet of these sewers. With a continuous pipe system the piezometric level would be greater and frequency of backflow would increase. To avoid this condition it would be necessary to construct an additional 24-inch pipeline from Gunn High School to El Camino Real and connect all the existing storm sewers to this new pipeline.

The total cost of this plan is estimated to be 410,000 dollars.

3.5 Alternative Plan 4: Pump Station at Laguna Avenue

As per this alternative plan, the existing system will be retained. In addition, a 36-inch pipeline would be laid between Laguna and El Camino Real to carry about 100 cfs and a 500 hp pump station would be installed at Laguna Avenue. The total cost of this alternative is estimated to be 639,000 dollars.

3.6 Alternative Plan 5: Construct Additional Pipe from Laguna Avenue to El Camino Real.

The existing pipe at Laguna is capable of carrying 210 feet per second. The new pipeline would be required to carry 100 cfs. A 45-inch diameter pipe would be required to carry this discharge. The total cost of this plan is estimated to be $325,000.

4.0 Conclusion

Of the five alternative plans presented above, Plan 2, which suggests raising of levees and spillway crest, is the least costly alternative. However, high levees on school ground may not be aesthetically desirable. Further, raising of levees may generate some flooding upstream of Foothill Expressway. The Alternative Plan 1, suggesting Federal Flood Insurance, and Plan 5, suggesting additional pipeline between Laguna Avenue and El Camino Real, are the next two economical plans. Both the plans compare well in costs and it would be appropriate to select one of these plans as the final improvement plan.